



November 24, 2015

Reference No. 038443

Mr. Timothy D. Hoffman  
Dinsmore & Shohl  
Fifth Third Center  
1 S. Main St. Suite 1300  
Dayton, Ohio  
45402

Mr. John Haymaker – Tenant  
S&J Precision  
2015 Dryden Road  
Moraine, Ohio  
45439

Dear Messrs. Hoffman and Haymaker:

**Re:     Summary of Vapor Intrusion Sampling Results  
S&J Precision – Building 12  
South Dayton Dump and Landfill Site, Moraine, Ohio**

GHD (formerly Conestoga-Rovers & Associates [CRA]) prepared this letter to inform you of the results of the vapor intrusion (VI) sampling completed at your property from 2012 to 2015. Sub-slab (SS, space under your building floor) and indoor air (IA) samples were collected in 2012 as part of the VI investigation at the South Dayton Dump and Landfill (SDDL) Site, and from 2013 to 2015 to evaluate the performance of the installed sub-slab depressurization system (SSDS). The sample locations within S&J Precision (designated as Building 12, northern portion) are presented on Figure 1. GHD is conducting this work on behalf of the companies that have responded to Agency requests for Site investigation and VI studies (Respondents). Oversight is being performed by USEPA.

VI is the migration of volatile chemicals from the subsurface into overlying buildings. VI is a potential concern at any building, existing or planned, located near soil, groundwater, or soil vapor containing solvent- or petroleum-based compounds that may volatilize or chemicals that are combustible.

GHD collected SS and IA samples to determine if solvent- or petroleum-related compounds are present in soil vapor beneath the foundation and in indoor air within the buildings at levels which exceed SS and/or IA screening levels, as established by the Ohio Department of Health (ODH).

The ODH has recommended the screening levels for SS and IA samples. The screening levels represent concentrations of substances that are unlikely to cause harmful (adverse) health effects in exposed people, based on residential exposure. Detections in IA below these levels are not a health concern. The SS screening levels are calculated based on an attenuation factor (AF) to account for the mixing and ventilation that occurs when vapors enter the IA space<sup>1</sup>. In November 2015, USEPA

---

<sup>1</sup> The 2012 ODH Screening levels were calculated based on an AF of 10, reflective of 2002 USEPA guidance. USEPA revised and issued final VI guidance in 2015 which utilizes an AF of 33 for residential buildings; see "OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Source to Indoor Air (USEPA, June 2015) (Final Vapor Intrusion Guidance)".

proposed to supplement the ODH screening levels for the industrial buildings with SSDSs at the Site with SS values based on an AF of 33, to reflect current VI guidance for residential buildings [screening levels calculated based on an AF of 33 are referred to as ODH SS screening levels (AF=33)]. GHD collected and submitted samples to TestAmerica Inc. GHD received and validated the results of the laboratory analysis. A copy of the validated analytical results compared to the ODH screening levels (AF=10) can be found in Table 1.

Compounds detected at concentrations greater than the ODH SS screening levels (AF=10; AF=33) and ODH IA screening levels from SS and IA samples are presented below. All of the sample results are reported in units of parts per billion by volume (ppbv).

**Table A Summary of Building 12 Sampling Results for S&J Precision**

Location	Sample Type	Sampling Date	Parameter	Detected Concentration (ppbv)	ODH IA Screening Level (ppbv)	ODH SS Screening Level (AF=10; AF=33) (ppbv)
SS-12-SJ-A	Sub-slab	01/06/2012	Trichloroethylene (TCE)	1,300	Not Applicable	20; 66
		03/07/2012		1,400 / 1,400		
SS-12-SJ-B	Sub-Slab	01/06/2012	Cis-1,2-Dichloro ethene	570	Not Applicable	370; 1,221
		03/07/2012		530		
		10/24/2013		470 / 480		
		01/17/2014		390 J / 210 J		
		04/02/2014		120 J / 410 J		
		01/06/2012	TCE	5,600	Not Applicable	20; 66
		03/07/2012		5,600		
		10/24/2013		6,700 / 7,000		
		01/17/2014		6,400 / 5,300		
		04/02/2014		1,600 J / 6,100 J		
		02/18/2015		3,300 / 2,000		
		07/13/2015		7,700		
		10/24/2013				
SS-12-SJ-C	Sub-Slab	01/06/2012	TCE	230	Not Applicable	20; 66
		03/07/2012		180		
		10/24/2013		31		
SS-12-SJ-D	Sub-Slab	01/06/2012	TCE	1,200	Not Applicable	20; 66
		03/07/2012		940		
		10/24/2013		1,500		
		07/12/2015		110 / 110		
IA-12-SJ-A-	Indoor Air	03/07/2012	TCE	2.7	2	Not Applicable

**Table A Summary of Building 12 Sampling Results for S&J Precision**

Location	Sample Type	Sampling Date	Parameter	Detected Concentration (ppbv)	ODH IA Screening Level (ppbv)	ODH SS Screening Level (AF=10; AF=33) (ppbv)
IA-12-SJ-D	Indoor Air	03/07/2012	TCE	3.1	2	Not Applicable

Notes:

Value / Value – Result / Duplicate Result  
J – Estimated Concentration

### **What do these results mean?**

In 2012, TCE was detected in both IA and SS samples at concentrations greater than ODH IA and SS screening levels, indicating that VI of TCE was occurring. From 2012 to 2014, cis-1,2-DCE was detected in SS samples at concentrations greater than the ODH SS screening level (AF=10), but was either not detected or detected in IA at concentrations less than the ODH IA screening level, indicating that there was potential for VI of cis-1,2-DCE to occur.

The installation of the SSDS in S&J Precision Building 12 was completed on September 30, 2013, with upgrades completed on December 20, 2013, and March 6, 2014. Since the installation of the SSDS, the concentration of cis-1,2-DCE in SS soil vapor has decreased to less than the ODH SS screening level, yet TCE in SS soil vapor remains greater than the ODH SS screening level (AF=33). Following the installation of the SSDS, IA concentrations of TCE decreased to less than the ODH IA screening level, which indicates that the SSDS is mitigating VI from SS soil vapor into IA.

### **Conclusion**

Based on the TCE SS soil vapor sample exceedances of ODH SS screening levels (AF=10 and AF=33), continued operation of the SSDS for Building 12 is required and system upgrades should be considered.

### **Recommendations**

As presented on Figure 1, U.S. EPA and GHD propose to install two additional stemlines (EP-3 stemline 3 and EP-3 stemline 4) in S&J Precision in the vicinity of SS-12-SJ-B in order to further address the TCE exceedances at that location. GHD will collect samples 60 days following the proposed system modifications to monitor concentrations.

GHD will install valves at all extraction points, where possible, to control and reduce the amount of vacuum applied to the sub-slab. GHD notes that it may not be feasible to install valves at all suction points due to the existing system configuration.

We would like to discuss the information and recommendations provided in this letter with you and will be in contact to make arrangements for a meeting.

Thank you for your cooperation. If you have questions related to the sampling or on-going site investigation, please do not hesitate to contact the undersigned.

GHD Services Inc.

Julian Hayward

VC/cb/1

Encl.

cc: Steve Renninger - U.S. EPA Removal Program Manager  
Leslie Patterson – U.S. EPA Remedial Program Manager  
Jenny Davison – U.S. EPA Remedial Program Manager  
Maddie Adams – Ohio EPA, Site Coordinator

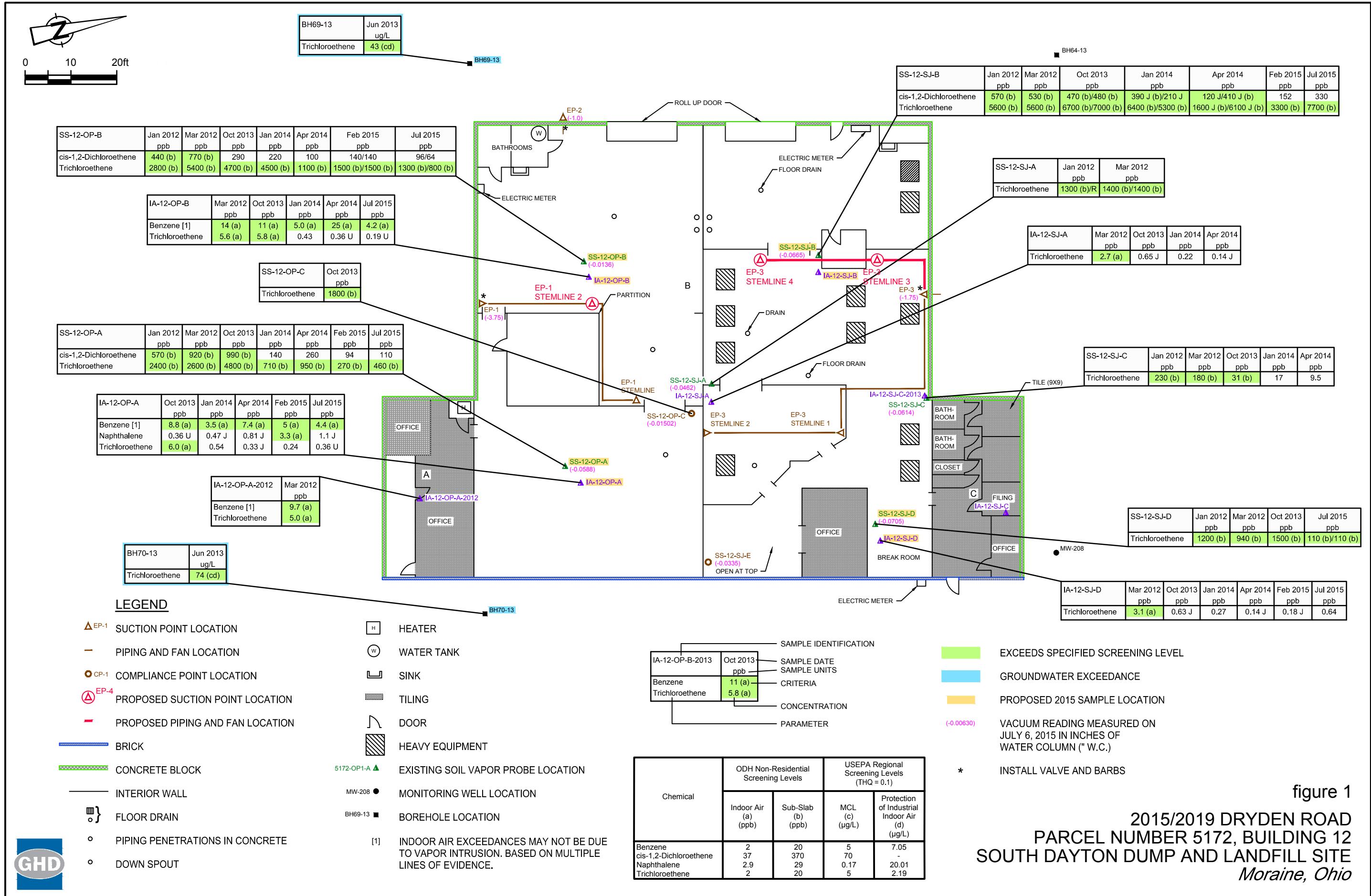


Table 1

**Summary Of Building 12 - S+J Precision VI Analytical Results**  
**South Dayton Dump And Landfill Site**  
**Moraine, Ohio**  
**2012-2015**

Sample Location:  
 Sample Date:

Parameters	ODH Non-Residential Screening Levels		ODH Non-Residential Action Levels		IA-12-SJ-A 3/7/2012	IA-12-SJ-A 10/24/2013	IA-12-SJ-A 1/17/2014	IA-12-SJ-A 4/2/2014	IA-12-SJ-B 10/24/2013	IA-12-SJ-B 2/18/2015	IA-12-SJ-B 7/13/2015	IA-12-SJ-C 10/24/2013
	Sub-Slab Soil Gas a	Indoor Air c	Sub-Slab Soil Gas b	Indoor Air d								
<b>Volatile Organic Compounds</b>												
1,1-Dichloroethane	160	16	1600	160	0.026 U	0.13 U	0.026 U	0.026 U	0.13 U	0.47 U	0.026 U	0.13 U
Benzene	20	2	200	20	0.22	0.34 J	0.20	0.28	0.31 J	1.0 U	0.24	0.34 J
Chloroform (Trichloromethane)	800	80	8000	800	0.066 J	0.19 U	0.038 U	0.038 U	0.19 U	0.69 U	0.085 J	0.19 U
cis-1,2-Dichloroethene	370	37	3700	370	0.077 J	0.30 U	0.060 U	0.060 U	0.30 U	1.1 U	0.060 U	0.30 U
Ethylbenzene	2500	250	25000	2500	0.17 J	1.1	0.77	6.1	1.1	15	2.7	1.5
m&p-Xylenes	2000	200	20000	2000	0.58	3.6	2.6	14	3.3	41 J	7.9	4.4
Naphthalene	29	2.9	-	-	0.12 J	0.45 U	0.090 UJ	0.097 J	0.45 U	1.6 U	0.70	0.45 U
o-Xylene	2000	200	20000	2000	0.25	1.2	0.80	2.7	1.1	9.4	3.3	1.2
Tetrachloroethylene	250	25	2500	250	0.62	0.40 J	0.33	0.41	0.43 J	0.73 U	0.58	0.60 J
Trichloroethylene	20	2	200	20	2.7 <sup>c</sup>	0.65 J	0.22	0.14 J	0.55 J	1.4 J	0.20	0.69 J
Vinyl chloride	20	2	200	20	0.071 U	0.36 U	0.071 U	0.071 U	0.36 U	1.3 U	0.071 U	0.36 U

## Notes:

All units are in parts per billion by volume (ppbv)

J - Estimated concentration.

R - Rejected.

U - Not detected at the associated reporting limit.

UJ - Not detected; associated reporting limit is estimated.

-- Not applicable.

- Concentration was greater than applicable criteria.

Table 1

**Summary Of Building 12 - S+J Precision VI Analytical Results**  
**South Dayton Dump And Landfill Site**  
**Moraine, Ohio**  
**2012-2015**

Sample Location:  
 Sample Date:

Parameters	ODH Non-Residential Screening Levels		ODH Non-Residential Action Levels		IA-12-SJ-C 1/17/2014	IA-12-SJ-C 4/2/2014	A-12-SJ-C-201 3/7/2012	IA-12-SJ-D 3/7/2012	IA-12-SJ-D 10/24/2013	IA-12-SJ-D 1/17/2014	IA-12-SJ-D 4/2/2014	IA-12-SJ-D 2/18/2015
	Sub-Slab Soil Gas a	Indoor Air c	Sub-Slab Soil Gas b	Indoor Air d								
<b>Volatile Organic Compounds</b>												
1,1-Dichloroethane	160	16	1600	160	0.026 U	0.026 U	0.026 U	0.026 U	0.13 U	0.026 U	0.026 U	0.026 U
Benzene	20	2	200	20	0.21	0.30	0.18 J	0.21	0.32 J	0.25	0.25	0.28
Chloroform (Trichloromethane)	800	80	8000	800	0.038 U	0.038 U	0.049 J	0.074 J	0.19 U	0.038 U	0.038 U	0.038 U
cis-1,2-Dichloroethene	370	37	3700	370	0.060 U	0.060 U	0.093 J	0.30 U	0.060 U	0.060 U	0.060 U	0.060 U
Ethylbenzene	2500	250	25000	2500	0.77	5.2	0.094 J	0.17 J	1.1	0.70	4.7	9.3
m&p-Xylenes	2000	200	20000	2000	2.5	12	0.29	0.51	3.3	2.3	11	24 J
Naphthalene	29	2.9	-	-	0.11 J	0.097 J	0.090 UJ	0.090 UJ	0.45 U	0.090 UJ	0.13 J	0.090 U
o-Xylene	2000	200	20000	2000	0.69	2.0	0.12 J	0.23	1.0	0.64	1.8	5.4
Tetrachloroethylene	250	25	2500	250	0.36	0.39	0.41	0.67	0.37 J	0.36	0.35	0.24
Trichloroethylene	20	2	200	20	0.25	0.15 J	1.6	3.1 <sup>e</sup>	0.63 J	0.27	0.14 J	0.18 J
Vinyl chloride	20	2	200	20	0.071 U	0.071 U	0.071 U	0.071 U	0.36 U	0.071 U	0.071 U	0.071 U

## Notes:

All units are in parts per billion by volume (ppbv)

J - Estimated concentration.

R - Rejected.

U - Not detected at the associated reporting limit.

UJ - Not detected; associated reporting limit is estimated.

- - Not applicable.

- Concentration was greater than applicable criteria.

Table 1

**Summary Of Building 12 - S+J Precision VI Analytical Results**  
**South Dayton Dump And Landfill Site**  
**Moraine, Ohio**  
**2012-2015**

Sample Location:												
Sample Date:												
Parameters	ODH Non-Residential Screening Levels		ODH Non-Residential Action Levels		IA-12-SJ-D 7/13/2015	OA-12 10/24/2013	OA-12 1/17/2014	OA-12-SJ 3/7/2012	OA-12-SJ 4/2/2014	OA-12-SJ 2/18/2015	OA-12-SJ 7/13/2015	SS-12-SJ-A 1/6/2012
	Sub-Slab Soil Gas a	Indoor Air c	Sub-Slab Soil Gas b	Indoor Air d								
<b>Volatile Organic Compounds</b>												
1,1-Dichloroethane	160	16	1600	160	0.026 U	0.026 U	0.026 U	0.026 U	0.026 UJ	0.026 U	0.026 U	3.5 U
Benzene	20	2	200	20	0.22	0.12 J	0.23	0.056 U	0.33	0.29 J	0.14 J	1.8 U
Chloroform (Trichloromethane)	800	80	8000	800	0.065 J	0.038 U	0.038 U	0.038 U	0.11 J	0.038 UJ	0.038 U	8.8 J
cis-1,2-Dichloroethene	370	37	3700	370	0.060 U	0.060 U	0.060 U	0.060 U	0.060 UU	0.060 U	0.060 U	26
Ethylbenzene	2500	250	25000	2500	2.9	0.20	0.068 U	0.068 U	0.17 J	0.098 J	0.068 U	2.2 U
m&p-Xylenes	2000	200	20000	2000	8.1	0.74	0.12 U	0.12 U	0.54	0.27 J	0.18 J	4.8 U
Naphthalene	29	2.9	-	-	0.39 J	0.090 U	0.090 U	0.090 UU	0.090 U	0.090 UU	0.090 U	8.6 U
o-Xylene	2000	200	20000	2000	3.0	0.23	0.061 U	0.061 U	0.21	0.080 J	0.067 J	2.2 U
Tetrachloroethylene	250	25	2500	250	0.45	0.040 U	0.040 U	0.040 U	0.040 U	0.040 UU	0.058 J	5.8 J
Trichloroethylene	20	2	200	20	0.64	0.041 J	0.054 U	0.036 U	0.036 U	0.036 UU	0.44	1300 <sup>ab</sup>
Vinyl chloride	20	2	200	20	0.071 U	0.071 U	0.071 U	0.071 U	0.071 UU	0.071 U	0.071 U	2.9 U

## Notes:

All units are in parts per billion by volume (ppbv)

J - Estimated concentration.

R - Rejected.

U - Not detected at the associated reporting limit.

UJ - Not detected; associated reporting limit is estimated.

- - Not applicable.

- Concentration was greater than applicable criteria.

Table 1

**Summary Of Building 12 - S+J Precision VI Analytical Results**  
**South Dayton Dump And Landfill Site**  
**Moraine, Ohio**  
**2012-2015**

Sample Location: Sample Date:					SS-12-SJ-A 1/6/2012	SS-12-SJ-A 3/7/2012	SS-12-SJ-A 3/7/2012	SS-12-SJ-B 1/6/2012	SS-12-SJ-B 3/7/2012	SS-12-SJ-B 10/24/2013	SS-12-SJ-B 10/24/2013	SS-12-SJ-B 1/17/2014
Parameters	ODH Non-Residential Screening Levels		ODH Non-Residential Action Levels		Duplicate	Duplicate	Duplicate	Duplicate	Duplicate	Duplicate	Duplicate	Duplicate
	Sub-Slab Soil Gas a	Indoor Air c	Sub-Slab Soil Gas b	Indoor Air d								
<b>Volatile Organic Compounds</b>												
1,1-Dichloroethane	160	16	1600	160	R	1.8 U	1.8 U	9.0 U	5.8 U	8.7 U	8.2 U	6.2 U
Benzene	20	2	200	20	R	3.9 U	4.0 U	4.6 U	12 U	19 U	18 U	13 U
Chloroform (Trichloromethane)	800	80	8000	800	R	9.5 J	9.7 J	25 J	32 J	37 J	38 J	38 J
cis-1,2-Dichloroethene	370	37	3700	370	R	23	24	570 <sup>a</sup>	530 <sup>a</sup>	470 <sup>a</sup>	480 <sup>a</sup>	390 J <sup>a</sup>
Ethylbenzene	2500	250	25000	2500	R	4.8 U	4.8 U	5.6 U	15 U	23 U	21 U	16 U
m&p-Xylenes	2000	200	20000	2000	R	8.4 U	8.5 U	12 U	27 U	40 U	38 U	29 U
Naphthalene	29	2.9	-	-	R	6.3 U	6.4 U	22 UJ	20 UJ	30 U	28 U	22 U
o-Xylene	2000	200	20000	2000	R	4.3 U	4.3 U	5.6 U	14 U	21 U	19 U	15 U
Tetrachloroethylene	250	25	2500	250	R	6.9 J	7.0 J	9.2 J	10 J	13 U	14 J	14 J
Trichloroethylene	20	2	200	20	R	1400 <sup>ab</sup>	1400 <sup>ab</sup>	5600 <sup>ab</sup>	5600 <sup>ab</sup>	6700 <sup>ab</sup>	7000 <sup>ab</sup>	6400 <sup>ab</sup>
Vinyl chloride	20	2	200	20	R	5.0 U	5.0 U	7.4 U	16 U	24 U	22 U	17 U

## Notes:

All units are in parts per billion by volume (ppbv)

J - Estimated concentration.

R - Rejected.

U - Not detected at the associated reporting limit.

UJ - Not detected; associated reporting limit is estimated.

- - Not applicable.

- Concentration was greater than applicable criteria.

Table 1

**Summary Of Building 12 - S+J Precision VI Analytical Results**  
**South Dayton Dump And Landfill Site**  
**Moraine, Ohio**  
**2012-2015**

Sample Location:																
Sample Date:																
Parameters	ODH Non-Residential Screening Levels				ODH Non-Residential Action Levels				SS-12-SJ-B 1/17/2014 Duplicate	SS-12-SJ-B 4/2/2014 Duplicate	SS-12-SJ-B 4/2/2014 Duplicate	SS-12-SJ-B 2/18/2015 Duplicate	SS-12-SJ-B 2/18/2015 Duplicate	SS-12-SJ-B 7/13/2015 Duplicate	SS-12-SJ-C 1/6/2012 Duplicate	SS-12-SJ-C 3/7/2012 Duplicate
	Sub-Slab Soil Gas a	Indoor Air c	Sub-Slab Soil Gas b	Indoor Air d	Sub-Slab Soil Gas b	Indoor Air d	Sub-Slab Soil Gas b	Indoor Air d								
<b>Volatile Organic Compounds</b>																
1,1-Dichloroethane	160	16	1600	160	1.1 U	3.0 U	14 U	0.27 U	0.026 U	17 U	0.35 U	0.26 U				
Benzene	20	2	200	20	2.4 U	6.5 U	29 U	0.52	0.43	38 U	0.18 U	0.56 U				
Chloroform (Trichloromethane)	800	80	8000	800	19 J	10 J	36 J	19	14	46 J	0.79 J	0.70 J				
cis-1,2-Dichloroethene	370	37	3700	370	210 J	120 J	410 J <sup>a</sup>	152	110	330	0.65 J	0.60 U				
Ethylbenzene	2500	250	25000	2500	2.9 U	7.8 U	36 U	4.1	4.0	46 U	0.22 U	0.68 U				
m&p-Xylenes	2000	200	20000	2000	5.1 U	14 U	63 U	11.7	11 J	81 U	0.48 U	1.2 U				
Naphthalene	29	2.9	-	-	3.8 U	10 U	47 U	0.69 U	0.090 U	60 U	0.86 U	0.90 UU				
o-Xylene	2000	200	20000	2000	2.6 U	7.0 U	32 U	2.7	2.5	41 U	0.22 U	0.61 U				
Tetrachloroethylene	250	25	2500	250	7.3 J	4.6 U	21 U	9.8	8.1	27 U	28	23				
Trichloroethylene	20	2	200	20	5300 <sup>ab</sup>	1600 J <sup>ab</sup>	6100 J <sup>ab</sup>	3300 <sup>ab</sup>	2000 <sup>ab</sup>	7700 <sup>ab</sup>	230 <sup>ab</sup>	180 <sup>a</sup>				
Vinyl chloride	20	2	200	20	3.0 U	8.2 U	37 U	0.14 U	0.071 U	48 U	0.29 U	0.71 U				

## Notes:

All units are in parts per billion by volume (ppbv)

J - Estimated concentration.

R - Rejected.

U - Not detected at the associated reporting limit.

UJ - Not detected; associated reporting limit is estimated.

- - Not applicable.

- Concentration was greater than applicable criteria.

Table 1

**Summary Of Building 12 - S+J Precision VI Analytical Results**  
**South Dayton Dump And Landfill Site**  
**Moraine, Ohio**  
**2012-2015**

Sample Location:												
Sample Date:												
Parameters	ODH Non-Residential Screening Levels		ODH Non-Residential Action Levels									
	Sub-Slab Soil Gas a	Indoor Air c	Sub-Slab Soil Gas b	Indoor Air d	SS-12-SJ-C 10/24/2013	SS-12-SJ-C 1/17/2014	SS-12-SJ-C 4/2/2014	SS-12-SJ-D 1/6/2012	SS-12-SJ-D 3/7/2012	SS-12-SJ-D 10/24/2013	SS-12-SJ-D 7/12/2015	SS-12-SJ-D 7/12/2015 Duplicate
<b>Volatile Organic Compounds</b>												
1,1-Dichloroethane	160	16	1600	160	0.052 U	0.052 U	0.026 U	1.1 U	2.0 U	-	0.13 U	0.26 U
Benzene	20	2	200	20	0.12 J	0.15 J	0.14 J	0.54 U	4.2 U	-	0.28 U	0.56 U
Chloroform (Trichloromethane)	800	80	8000	800	0.16 J	0.076 U	0.071 J	24	23	-	0.69 J	0.63 J
cis-1,2-Dichloroethene	370	37	3700	370	0.18 J	0.12 U	0.060 U	240	200	-	24	21
Ethylbenzene	2500	250	25000	2500	0.14 U	0.23 J	0.068 U	0.66 U	5.2 U	-	0.34 U	0.68 U
m&p-Xylenes	2000	200	20000	2000	0.43	0.79	0.12 U	1.4 U	9.1 U	-	0.60 U	1.2 U
Naphthalene	29	2.9	-	-	0.18 U	0.18 U	0.090 U	2.6 U	6.8 U	-	0.45 U	0.90 U
o-Xylene	2000	200	20000	2000	0.14 J	0.27 J	0.061 U	0.66 U	4.6 U	-	0.31 U	0.61 U
Tetrachloroethylene	250	25	2500	250	4.5	3.0	1.5	3.5 J	3.2 J	-	0.68 J	0.69 J
Trichloroethylene	20	2	200	20	31 <sup>a</sup>	17	9.5	1200 <sup>ab</sup>	940 <sup>ab</sup>	1500 <sup>ab</sup>	110 <sup>a</sup>	110 <sup>a</sup>
Vinyl chloride	20	2	200	20	0.14 U	0.14 U	0.071 U	0.87 U	5.4 U	-	0.36 U	0.71 U

## Notes:

All units are in parts per billion by volume (ppbv)

J - Estimated concentration.

R - Rejected.

U - Not detected at the associated reporting limit.

UJ - Not detected; associated reporting limit is estimated.

- - Not applicable.

- Concentration was greater than applicable criteria.